

RAR中AMBR值[QOS]丢失，Sy触发器无法更改策略计数器

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简介

本文档介绍如何对RAR中AMBR值[QOS]未命中的问题进行故障排除，以便Sy触发器更改策略计数器。

先决条件

要求

Cisco 建议您了解以下主题：

- PCRF/CPS
- 直径协议

使用的组件

本文档中的信息基于适用于PCRF的思科策略套件解决方案。

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。

缩写

PCRF
OCS

策略和计费规则功能
在线计费系统

问题

在创建新会话后应用限制（新策略计数器状态）时，AMBR值不会应用于发送到PGW的RAR中，仅发送QCI值。

QoS-Information: Default-EPS-Bearer-QoS: QoS-Class-Identifier: 8 Revalidation-Time: -486962116

问题分析

当您查看PCRF跟踪时，会发现OCS在SLR/SLA交换后立即发送SNR。

此SNR与SLA具有相同的Policy-Counter-Status(**NoThrottle**)值。

在处理SNR时，您可以看到PCRF正确加载Unlimited_AMBR表，直到这一切正常。

几分钟后，将向PCRF发送新的SNR，并更改Policy-Counter-Status（应用Throttle1）（策略 — 计数）。当您处理此问题时，PCRF不加载Unlimited_AMBR表，因此无法获得Throttle1的AMBR值，因此不会传递到RAR中的PGW。

这些是调试日志中的一些片段，用于详细了解上述行为。

CCR-I期间正确加载的CRD表

```
----- Debugging Messages ----- INFO core Tagging message with ID:
GX_TGPP INFO diameter Adding extracted AVP to policy: DiameterMessageAvp [code=QoS-Class-
Identifier, value=8] INFO core Start session triggered INFO TGPP [Rel9] features supported on
session 0001-diamproxymod-ggsae01-
gx.epc.mnc099.mcc530.3gppnetwork.org;405022273;510802;5f4efc9a-5202 INFO gx Creating new
diameter session 0001-diamproxymod-ggsae01-
gx.epc.mnc099.mcc530.3gppnetwork.org;405022273;510802;5f4efc9a-5202 INFO custrefdata Adding AVP
[APN_TABLE/LOGICAL_APN], value: DATA INFO custrefdata Adding AVP [LOCATION_TABLE/LOCATION_REF],
value: HOME INFO custrefdata Adding AVP [PROFILE_TABLE/PROFILE_ID], value: PROFILE_DATA INFO
custrefdata Adding AVP [QCIREF/QCI], value: 8 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle3_AMBR_DOWN], value: 20000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle2_AMBR_UP], value: 50000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle6_AMBR_UP], value: 600000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle3_AMBR_UP], value: 20000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle4_AMBR_DOWN], value: 50000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle1_AMBR_DOWN], value: 12000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle2_AMBR_DOWN], value: 50000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle5_AMBR_UP], value: 100000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle6_AMBR_DOWN], value: 600000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle1_AMBR_UP], value: 12000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle5_AMBR_DOWN], value: 100000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle4_AMBR_UP], value: 500000000 INFO auth Success ALLOW_ALL authorization
INFO core Switching credential id to 53099204XXXXXX for session INFO core domain: mobile INFO sy
Created new Sy diameter session INFO sy Triggering synchronous SLR Message on sessioniMOD-
PCRF01-qns01-1.cluster-MOD1.-Model;1597873954;1029;6862816375560209413 INFO debug-code The Sy
Policy Counter Status is : NoThrottle
```

ICCR后的中等SNR

此外，CRD表加载正确，并根据从SNR接收的策略计数器选择了所需的QOS。

```
----- Debugging Messages ----- INFO core Tagging message with ID:
SY_V11 INFO core Successful load by key: diameterSessionKey:iMOD-PCRF01-qns01-1.cluster-MOD1.-
Model%3B1597873954%3B1029%3B6862816375560209413 INFO custrefdata Adding AVP
[APN_TABLE/LOGICAL_APN], value: DATA INFO custrefdata Adding AVP [LOCATION_TABLE/LOCATION_REF],
value: HOME INFO custrefdata Adding AVP [PROFILE_TABLE/PROFILE_ID], value: PROFILE_DATA INFO
custrefdata Adding AVP [QCIREF/QCI], value: 8 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle3_AMBR_DOWN], value: 20000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle2_AMBR_UP], value: 5000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle6_AMBR_UP], value: 600000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle3_AMBR_UP], value: 20000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle4_AMBR_DOWN], value: 50000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle1_AMBR_DOWN], value: 1200000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle2_AMBR_DOWN], value: 5000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle5_AMBR_UP], value: 100000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle6_AMBR_DOWN], value: 600000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle1_AMBR_UP], value: 1200000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle5_AMBR_DOWN], value: 100000000 INFO custrefdata Adding AVP
[Unlimited_AMBR/Throttle4_AMBR_UP], value: 50000000 INFO core domain: mobile INFO Sy client
Sending SNA Message on session iMOD-PCRF01-qns01-1.cluster-MOD1.-
Model;1597873954;1029;6862816375560209413 INFO debug-code The Sy Policy Counter Status is :
NoThrottle INFO debug-code The Sy Policy Counter Status is : NoThrottle
```

RAR已发送到PGW，且QOS信息正确

```
Message: com.broadhop.diameter2.messages.DiameterRequestMessage Application Id: Gx (16777238)
Command Code: Gx_RAR (258) Dest host: 0001-diamproxy.mod-ggsae01-
gx.epc.mnc099.mcc530.3gppnetwork.org Dest realm: epc.mnc099.mcc530.3gppnetwork.org Device
protocol: GX_TGPP End to end id: 0 (0x00000000) Hop by hop id: 0 (0x00000000) Origin state: 0
Stack name: null Session-Id: 0001-diamproxy.mod-ggsae01-
gx.epc.mnc099.mcc530.3gppnetwork.org;405022273;510802;5f4efc9a-5202 Auth-Application-Id:
16777238 Re-Auth-Request-Type: 0 QoS-Information: APN-Aggregate-Max-Bitrate-UL: 600000000 APN-
Aggregate-Max-Bitrate-DL: 600000000 Default-EPS-Bearer-QoS: QoS-Class-Identifier: 8
Revalidation-Time: -486962716 =====
```

接收的连续SNR

此处未为Unlimited_AMBR加载CRD表。

```
----- Debugging Messages ----- INFO core Tagging message with ID:
SY_V11 INFO core Successful load by key: diameterSessionKey:iMOD-PCRF01-qns02-1.cluster-MOD1.-
Model%3B1597874000%3B1089%3B6862816573128705089 INFO custrefdata Adding AVP
[APN_TABLE/LOGICAL_APN], value: DATA INFO custrefdata Adding AVP [LOCATION_TABLE/LOCATION_REF],
value: HOME INFO custrefdata Adding AVP [PROFILE_TABLE/PROFILE_ID], value: PROFILE_DATA INFO
custrefdata Adding AVP [QCIREF/QCI], value: 8 INFO core domain: mobile INFO Sy client Sending
SNA Message on session iMOD-PCRF01-qns02-1.cluster-MOD1.Spark-
Model;1597874000;1089;6862816573128705089 INFO debug-code The Sy Policy Counter Status is :
Throttle1 INFO debug-code The Sy Policy Counter Status is : Throttle1 INFO debug-code ECGI :
530992xxxxxx INFO debug-code IMSI : 530992041xxxxxx INFO debug-code CGI : INFO debug-code Next
Eval Time: 2020-09-02T10:03:05Z INFO core domain: mobile INFO rt Added revalidation time Wed Sep
02 03:13:00 UTC 2020 INFO gx Sending RAR Message on session 0001-diamproxy.mod-ggsae01-
gx.epc.mnc099.mcc530.3gppnetwork.org;405022275;511314;5f4efd58-5202
```

在QOS信息中不带AMBR发送RAR

预期发送时QOS值会降低。

```
Message: com.broadhop.diameter2.messages.DiameterRequestMessage Application Id: Gx (16777238)
Command Code: Gx_RAR (258) Dest host: 0001-diamproxy.mod-ggsae01-
gx.epc.mnc099.mcc530.3gppnetwork.org Dest realm: epc.mnc099.mcc530.3gppnetwork.org Device
protocol: GX_TGPP End to end id: 0 (0x00000000) Hop by hop id: 0 (0x00000000) Origin state: 0
Stack name: null Session-Id: 0001-diamproxy.mod-ggsae01-
gx.epc.mnc099.mcc530.3gppnetwork.org;405022275;511314;5f4efd58-5202 Auth-Application-Id:
16777238 Re-Auth-Request-Type: 0 QoS-Information: Default-EPS-Bearer-QoS: QoS-Class-Identifier:
8 Revalidation-Time: -486962116 =====
```

此外，还查看了debug qns日志，发现由于条件为错误CCR，该表被跳过

```
MOD-PCRF01-qns02 MOD-PCRF01-qns02 2020-09-02 02:13:00,740 [pool-108-thread-1] DEBUG
c.b.policy.impl.RulesPolicyService - Policy event: Message:
com.broadhop.diameter2.messages.DiameterRequestMessage Application Id: Sy (16777302) Command
Code: Sy_SNR (8388636) Dest host: mod-pcrf01-lb Dest realm: epc.mnc099.mcc530.3gppnetwork.org
Device protocol: SY_V11 End to end id: 1874920025 (0x6fc10259) Hop by hop id: 30806209
(0x01d610c1) Origin state: 0 Stack name: null Origin host: sy01.mod02.bumblebee.co.nz Origin
realm: mod02.bumblebee.co.nz Session-Id: iMOD-PCRF01-qns01-1.cluster-MOD1.Spark-
Model;1597873954;1029;6862816375560209413 Auth-Application-Id: 16777238 Policy-Counter-Status-
Report: Policy-Counter-Identifier: THROTTLE Policy-Counter-Status: Throttle1 Route-Record:
sy01.mod02.bumblebee.co.nz QPS-Internal-Route-Record-Host: mod-
dsc02.epc.mnc099.mcc530.3gppnetwork.org QPS-Internal-Route-Record-Realm:
epc.mnc099.mcc530.3gppnetwork.org, no return address MOD-PCRF01-qns01 MOD-PCRF01-qns01 2020-09-
02 02:13:00,742 [pool-109-thread-1] DEBUG c.b.c.i.CustomerReferenceDataManager - Skipping table
Unlimited_AMBR since condition is false CCR
```

此外，还研究了PB对CRD表载荷的影响。

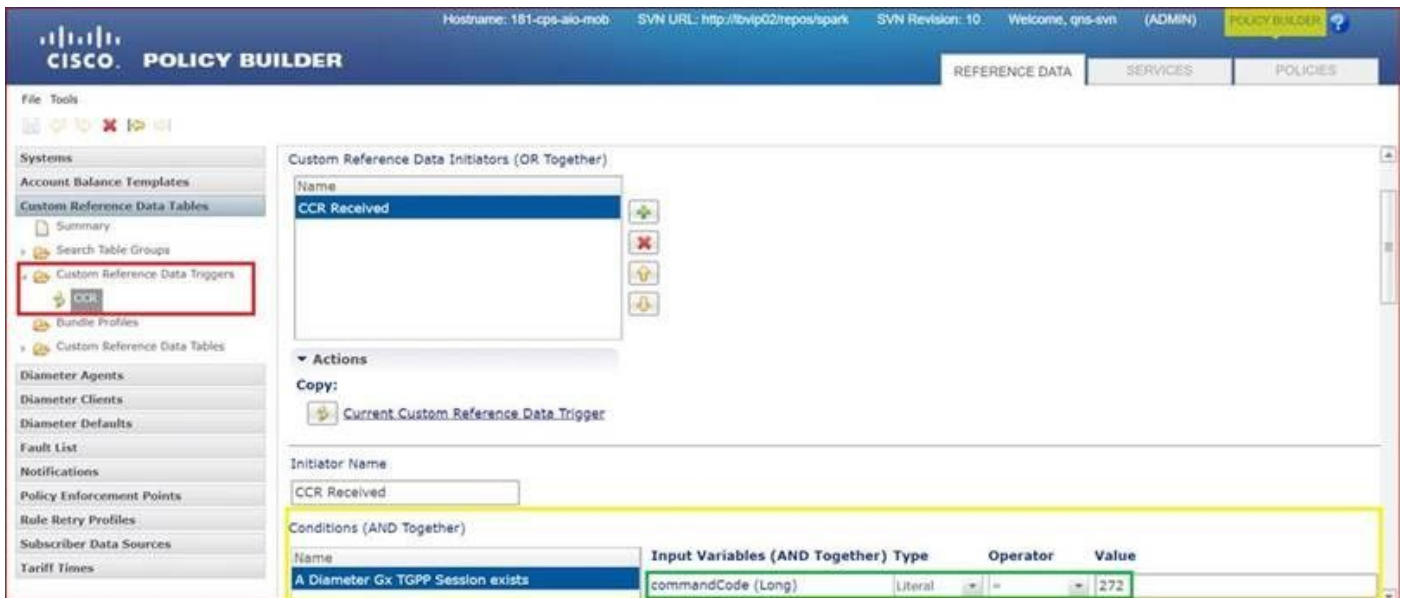
浏览提供的SVN转储后，将找到此表的此配置：无限制_AMBR

The screenshot shows the Cisco Policy Builder interface. On the left, a tree view shows 'Custom Reference Data Tables' with 'Unlimited_AMBR (0)' selected. The main area displays the configuration for this table. The 'Name' is 'Unlimited_AMBR' and the 'Display Name' is 'Unlimited AMBR'. The 'Activation Condition' is set to 'CCR'. Below this, a table lists the columns for the CRD table:

*Name	Display Name	*Use In Condit*	Type	Key	Required
APN	APN	<input checked="" type="checkbox"/>	Text	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Throttle1_AMBR_UP	Throttle1_AMBR_UP	<input checked="" type="checkbox"/>	Text	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Throttle1_AMBR_DOWN	Throttle1_AMBR_DOWN	<input checked="" type="checkbox"/>	Text	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Throttle2_AMBR_UP	Throttle2_AMBR_UP	<input checked="" type="checkbox"/>	Text	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Throttle2_AMBR_DOWN	Throttle2_AMBR_DOWN	<input checked="" type="checkbox"/>	Text	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Throttle3_AMBR_UP	Throttle3_AMBR_UP	<input checked="" type="checkbox"/>	Text	<input type="checkbox"/>	<input checked="" type="checkbox"/>

此表的激活条件基于CCR触发器。

因此，如果您看到此CCR触发器的内容，条件是，Gx直径会话存在，命令代码为272。Ie。CCR



因此，在没有与CCR对应的情况下，不会加载表。是的。SNR无权加载没有初始CCR [I或U]的CRD

解决方案

为SY会话添加CRD激活触发器，并执行新配置的发布。

Name

CCR

Custom Reference Data Initiators (OR Together)

Name

CCR Received

Sy Session Exists

Actions

Copy:

Current Custom Reference Data Trigger

Initiator Name

Sy Session Exists

Conditions (AND Together)

Name

A Diameter Sy v11 Session exists

Input Variables (AND Together)

Condition Outputs

DiameterSyV11Session (DiameterSyV11Session)

发布此新更改后，多次尝试进行数据呼叫，并且都成功。所有连续的SNR都能够加载CRD表，并根据来自Sy的传入策略计数器更改在RAR中发送正确的QOS。